



## **NASA STTR 2007 Phase I Solicitation**

### **T9 Rocket Propulsion Testing Systems**

In support of NASA's plans and visions for current space activities and future exploration goals, ground and simulated altitude testing of all large rocket propulsion systems are conducted at the John C. Stennis Space Center (SSC). Current testing includes the Space Shuttle Main Engine and the Rocketdyne RS68 engine. Existing test facilities are being modified and a new test stand is being built to test the Rocketdyne J-2X engine for the Constellation program.

This topic solicits advanced technologies: that support an Integrated Health Management (ISHM) capability for rocket engine testing and ground operations; for innovative non-intrusive sensors for measuring combustion instability, fluid properties under extreme conditions of pressure, temperature, and velocity; rocket plume sensors capable of measuring gas species, temperature, and velocity for hydrogen and hydrocarbon fuels. Specifically, sensors capable of measuring hot gas velocity up to Mach 5 in a vacuum and the heat flux impinging on the inside surface of a pipe during altitude simulation are needed to support J-2X engine testing. Computational tools to accurately model and predict rocket engine test stand components and system performance are also desired.

### **Subtopics**